U. S. DEPARTMENT of AGRICULTURE ★ SOIL CONSERVATION SERVICE

WATER SUPPLY OUTLOOK FOR MONTANA

and

FEDERAL-STATE-PRIVATE COOPERATIVE SNOW SURVEYS

Collaborating with

MONTANA AGRICULTURAL EXPERIMENT STATION

AS OF

MAR. 1, 1980

Issued by

NORMAN A. BERG
ADMINISTRATOR
SOIL CONSERVATION SERVICE
WASHINGTON, D.C.

Released by

VAN K HADERLIE
STATE CONSERVATIONIST
SOIL CONSERVATION SERVICE
Bozeman, Montana

In Cooperation with

J. A. ASLESON
DIRECTOR
Montana Agricultural Experiment Station

Report prepared by

PHILLIP E. FARNES, SNOW SURVEY SUPERVISOR
DONALD J. HUFFMAN, HYDROLOGIST
CINDY L. ONDRAK, STATISTICAL ASSISTANT
GLENN J. HERDINA, HYDROLOGIC TECHNICIAN

SOIL CONSERVATION SERVICE
P.O. Box 98
Bozeman, Montana 59715

STATEWIDE SNOWPACK

No major change occurred in snowpack conditions during February. Amounts measured are not as low as 1977, the record low year, however, many areas show between the second to fifth lowest amounts measured over the past twenty years. Some areas in the southern part of the state showed slight improvement while most areas in the north declined.

Except for a narrow band along the Canadian border, the northern part of the state has very low snowpack covering mountain watersheds. Some areas along the Yellowstone River and in the Bighorn Mountains also have low snow conditions. The amount of water stored in the snowpack in all of these areas is only 50 to 70 percent of average for March 1.

Southern Montana has better conditions, however, snowpack in most areas still is only 70 to 80 percent of average.

The only areas having near average snow condition are south and west of Red Lodge along the front face of the Beartooth and Absoraka Mountains.

Soils under the snowpack are drier than normal in all areas.

STATEWIDE STREAMFLOW

Spring and summer runoff will be only 50 to 60 percent of average over much of the state. Runoff is not expected to be as low as in 1977, but could be the second to fifth lowest runoff of record on many streams if present weather patterns continue.

The Ruby, Madison, Gallatin and Yellowstone Rivers in southern Montana and north in the Flathead River drainage will have a better runoff, but will still be in the 70-75 percent of average range. The Kootenai, St. Mary's and Milk Rivers near the Canadian border and the Stillwater River and Red Lodge Creek near Red Lodge, are expected to yield 80 to 85 percent average runoff.

Irrigation water supplies will be short in most drainages during mid and late summer. Extra effort will be needed to manage this season's low water supply to minimize the impact of deficient runoff.

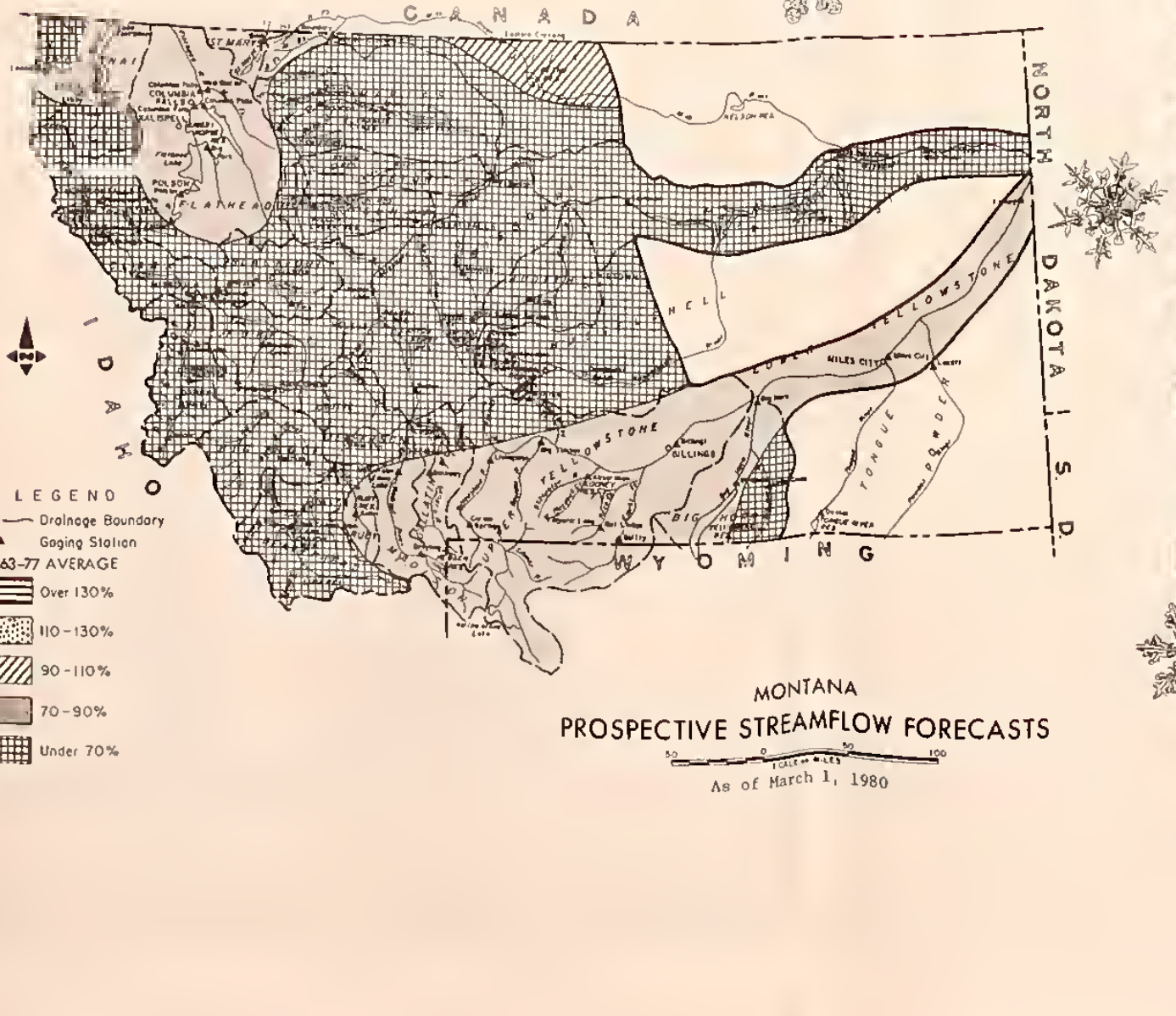
RECENT STORMS

Snowfall during the first six days in March has added moisture to deficient snowpacks, but has only improved conditions slightly. In most areas, this is near or a little above the average amount that would be expected during the first part of March.

All mountain areas and many valley areas have received some snow from these storm systems. Reports from SNOTEL sites indicate snowfall in the mountains added from one-half to two-and-one-half inches of water content to the snowpack.

The most significant increases were noted along the Montana line from west of Missoula to the Yellowstone National Park area.

If this storm had occurred prior to the March 1 snow surveys, many areas in southwest and south central Montana would have reported five to seven percent higher water content. In other areas, the increase would have shown one to three percent.



MONTANA
PROSPECTIVE STREAMFLOW FORECASTS
As of March 1, 1980

SNOW SURVEY DATA

SNOW

DRAINAGE BASIN and/or SNOW COURSE NAME	Elevation	THIS YEAR Date of Survey	THIS YEAR Snow Depth (Inches)	THIS YEAR Water Content (Inches)	PAST RECORD Water Content (Inches) Last Year	PAST RECORD Water Content (Inches) Average
ABUNDANCE LAKE	8800	2/27	47	13.6	13.4	18.9
AMBROSE	6480	2/26	35	10.4	12.6	11.9
ARCH FALLS	7350	2/27	32	8.7	10.1	11.2
BADGER PASS	6900	2/24	68	24.7	35.0	36.7
BALD EAGLE PEAK	5700	2/25	102	39.1	48.6	56.1
BALD RIDGE	7500	2/26	32	7.9	13.3	11.5
BANFIELD MOUNTAIN	5600	2/25	46	16.2	18.0	22.9
BANFIELD MOUNTAIN PILLOW	5600	2/25	SP	15.5	14.8	19.4
BAREE CREEK	5500	2/28	69	27.4	36.7	43.8
BAREE MIDWAY	4600	2/28	59	21.4	32.7	34.0
BAREE TRAIL	3800	2/28	14	4.7	9.7	10.0
BASIN CREEK	7180	2/27	24	5.2	6.4	7.0
BASSOO PEAK	5150	2/28	20	5.9	13.5	9.6
BEAGLE SPRINGS	8850	2/27	26	6.8	8.7	-
BEAGLE SPRINGS PILLOW	8850	2/27	SP	6.0	7.7	-
BEAR BASIN	8150	2/25	53	13.8	16.8	19.5
BEAR MOUNTAIN (ID)	5400	3/01	92	38.1	41.9	53.7
BEAR PAW SKI AREA	5200	2/28	13	3.2	14.2	6.3
BEAVER LAKE	5900	2/24	47	13.9	21.5	21.9
BERRY MEADOW	7000	3/03	22	5.5	7.6	7.2
BIG COULEE	5100	2/26	13	3.5	-	6.2
BIG CREEK	6750	2/24	92	35.1	35.7	39.4
BIG SKY	7700	3/02	47	12.2	-	13.8
BIG SKY MEADOW	6350	2/25	33	8.1	10.2	8.6
BIG SNOWY	7150	2/28	39	11.2	23.3	19.0
BLACK BEAR	7950	2/25	100	32.8	33.8	35.1
BLACK BEAR PILLOW	7590	2/25	SP	28.4	29.4	32.2
BLACK MOUNTAIN	7750	2/29	43	11.6	12.2	-
BLACK PINE	7100	2/28	27	7.8	11.3	13.2
BLACK PINE PILLOW	7100	2/28	SP	9.0	11.6	13.8
BLOODY DICK	7600	2/26	35	9.4	11.5	12.9
BLOODY DICK PILLOW	7600	2/26	SP	8.4	10.7	-
BLUE LAKE	5900	2/24	50	16.0	25.6	25.9
BOTS SOTS	8000	3/03	25	6.7	6.1	6.6
BOULDER MOUNTAIN	7950	2/25	43	12.4	19.1	17.1
BOULDER MOUNTAIN PILLOW	7950	2/25	SP	14.0	18.2	-
BOW RIVER #1 (AL)	5100	2/27	30	7.8	8.0	8.2
BOX CANYON	6670	2/29	35	9.2	10.4	12.1
BOX CANYON PILLOW	6670	2/29	SP	7.1	7.9	-
BOXELDER CREEK	5100	2/28	22	4.4	-	6.8
BRANHAM LAKES	8850	2/26	63	18.0	21.3	26.2
BRIDGER BOWL	7250	2/28	47	13.9	22.6	24.9
BRIDGER BOWL PILLOW	7250	2/28	SP	13.7	19.3	23.7
BRISTOW CREEK	3900	2/25	23	6.4	9.5	12.6
BRUSH CREEK TIMBER	5000	2/27	25	5.9	11.0	9.5
BULL MOUNTAIN	6600	2/26	20	4.5	9.2	4.9
CABIN CREEK	5200	2/27	18	4.4	6.7	6.6
CALL ROAD	8050	2/27	35	9.0	10.8	10.2
CALVERT CREEK	6450	2/27	31	7.9	9.9	11.4
CALVERT CREEK PILLOW	6450	2/27	SP	6.5	8.0	9.5
CAMP CREEK (ID)	6800	2/28	27	6.0	7.3	9.8
CAMP MISERY	6400	2/25	84	30.3	39.8	43.9
CAMP SENIA	7890	3/03	28	5.9	5.5	5.1
CANYON (WY)	7750	3/03	46	10.3	14.4	14.3
CARROT BASIN	9000	2/25	79	23.8	26.0	32.7
CARROT BASIN PILLOW	9000	2/25	SP	18.5	-	24.1
CEDAR GROVE	4100	2/25	29	8.2	14.5	12.0
CHATEAU LAWN #8 (AL)	5700	2/27	39	10.0	10.6	10.7
CHESSMAN RESERVOIR	6200	2/26	15	3.5	8.2	3.5
CHICKEN CREEK	4060	2/22	33	9.0	14.2	-
CLOVER MEADOW	8600	2/27	44	12.0	13.9	14.9
COLE CREEK	7850	2/28	47	14.4	15.8	15.1
COLE CREEK PILLOW	7850	2/28	SP	12.1	13.3	15.0
COLLEY CREEK	6300	2/29	32	5.5	8.5	8.1
COMBINATION	5600	2/28	15	3.9	6.2	5.6
COMBINATION PILLOW	5600	2/28	SP	4.5	5.9	5.8
COOKE STATION	8150	2/29	51	13.7	19.3	18.0
COPPER BOTTOM	5200	2/29	22	6.2	13.2	11.5
COPPER BOTTOM PILLOW	5200	2/29	SP	8.1	13.0	13.0
COPPER CAMP	6950	2/29	58	19.5	27.9	29.8
COPPER CAMP PILLOW	6950	2/29	SP	18.8	33.9	37.2
COPPER CREEK	5700	2/29	27	8.2	16.4	15.1
COPPER LAKE CREEK	6100	2/29	44	13.9	22.9	23.5
COPPER MOUNTAIN	7700	2/28	26	6.9	9.6	9.9
COTTONWOOD CREEK	6400	2/28	22	5.6	7.1	8.0
COYOTE HILL	4200	3/03	21	6.2	11.2	10.0
CREVICE MOUNTAIN	8400	2/28	31	7.3	11.1	9.8
CRYSTAL LAKE	6100	2/28	30	8.3	14.1	12.4
CRYSTAL LAKE PILLOW	6100	2/26	SP	7.2	-	-
DAD CREEK LAKE	8400	2/27	42	11.9	11.2	11.6
DAISY PEAK	7600	2/26	28	7.2	11.9	10.0
DALY CREEK	5780	2/29	33	9.2	11.4	10.7
DARKHORSE LAKE	8600	2/27	54	16.5	22.5	25.2
DAVIS CREEK	5400	3/01	54	19.8	15.3	22.9
DEADMAN CREEK	6450	2/29	25	6.0	11.2	11.0
DEADMAN CREEK PILLOW	6450	2/29	SP	6.1	10.3	9.8
DESERT MOUNTAIN	5600	2/25	37	10.9	14.0	14.5
DEVILS SLIDE	6100	2/27	50	14.0	16.0	20.0
DISCOVERY BASIN	7050	2/28	30	7.8	9.2	9.9
DIVIDE	7800	2/27	36	9.3	10.2	9.8
DIVIDE PILLOW	7800	2/27	SP	8.3	9.2	10.1
DIX HILL	6400	3/01	25	6.9	11.6	9.9
EAST FORK R.S.	5400	2/24	15	4.5	6.6	6.8
EL DORADO MINE	7800	2/26	44	12.4	18.3	18.9
ELK HORN SPRINGS	7800	2/27	26	7.1	7.0	8.5
ELK PEAK	8000	2/27	40	11.0	13.8	14.9
EMERY CREEK	4350	2/25	32	9.6	14.9	14.9
EMERY CREEK PILLOW	4350	2/25	SP	9.0	14.3	-
FATTY CREEK	5500	2/24	58	18.7	25.3	20.8
FISH CREEK	8000	2/27	26	5.7	7.1	8.3
FISHER CREEK	9100	2/29	85	25.3	33.3	34.5
FISHER CREEK PILLOW	9100	2/29	SP	25.6	31.4	32.3
FIVE SPRINGS FALLS (WY)	7500	2/28	15	3.1	5.9	7.3
FIVE-BULL	5700	2/29	17	3.7	8.8	6.9
FLATTOP MOUNTAIN PILLOW	6300	3/01	SP	33.1	33.2	44.5
FLEECER RIDGE	7500	2/26	28	7.0	11.4	10.1
FOOLHEN	6280	2/27	39	11.1	12.1	15.6
FOUR MILE	6900	2/29	26	5.8	9.0	7.7
FOURTH OF JULY	3450	2/27	17	8.3	8.6	-
FRED BURR PASS	8000	2/27	52	16.0	17.4	22.9
FREIGHT CREEK	6000	2/24	33	9.2	15.3	14.1
FRIDAY HILL	4620	2/27	42	13.8	18.9	-
FROHNER MEADOWS	6480	2/26	25	6.5	9.5	7.5
FROHNER MEADOWS PILLOW	6480	2/26	SP	6.7	7.4	6.0
GARVER CREEK	4250	3/01	25	8.0	9.0	11.4
GIBBONS PASS	7100	2/27	52	16.6	18.9	21.2
GOAT MOUNTAIN	7000	3/02	26	6.4	12.4	10.1
GOLD CREEK LAKE	7200	2/26	33	9.4	13.7	14.0

SNOW

DRAINAGE BASIN and/or SNOW COURSE NAME	Elevation	THIS YEAR Date of Survey	THIS YEAR Snow Depth (Inches)	THIS YEAR Water Content (Inches)	PAST RECORD Water Content (Inches) Last Year	PAST RECORD Water Content (Inches) Average
GOLD STONE	8100	2/26	41	11.6	13.6	15.5
GRASSHOPPER	7000	2/27	17	4.5	7.3	5.3
GRAVE CREEK	4300	3/01	31	10.6	15.3	17.5
GRAVE CREEK PILLOW	4300	3/01	SP	10.6	14.2	17.4
GRIFFIN CREEK DIVIDE	5150	2/28	30	8.0	13.3	10.9
GRIZZLY PEAK	8400	2/28	46	14.1	15.1	13.2
GUNSIGHT LAKE	6300	2/24	71	25.3	34.9	30.2
HALVERSON CREEK (ID)	4850	2/26	86	34.0	34.8	39.1
HAND CREEK	5030	2/27	32	9.0	15.2	11.8
HAND CREEK PILLOW	5030	2/27	SP	9.2	13.4	-
HAWKINS LAKE	6450	3/01	65	24.8	19.1	26.6
HAWKINS LAKE PILLOW	6450	3/01	SP	22.6	17.8	27.5
HEART LAKE TRAIL	4800	2/24	45	14.1	23.1	21.1
HEBGEN DAM	6550	2/26	34	9.2	10.4	11.2
HELL ROARING DIVIDE	5770	2/28	57	20.2	25.5	29.6
HERRIG JUNCTION	4850	2/22	53	17.0	21.9	-
HIGHWOOD DIVIDE	5650	2/26	23	6.5	-	9.1
HIGHWOOD STATION	4600	2/26	1	.1	7.1	4.4
HOLBROOK	4530	2/28	16	5.4	-	9.6
HOOD MEADOW	6600	2/27	30	8.0	9.0	9.7
HOODOO BASIN	6000	2/24	97	37.2	42.3	45.4
HOODOO BASIN PILLOW	6000	2/24	SP	34.0	38.2	44.0
HOODOO CREEK	5900	2/24	91	34.5	40.2	42.0
INDEPENDENCE	7850	2/29	47	12.8	16.0	17.1
INTERGAARD	6450	2/29	22	5.8	7.2	7.9
JACK CREEK	7500	2/28	22	5.6	7.6	4.9
JAHNKE LAKE TRAIL	7200	2/26	31	7.9	9.6	9.1
JOHNSON PARK	6450	2/26	18	3.8	8.2	6.8
KEELER CREEK	3300	2/26	21	7.1	13.1	14.6
KILGORE (ID)	6200	2/27	30	8.6	10.5	10.6
KINGS HILL	7500	2/29	31	8.6	12.8	12.7
KISHENEHN	3890	2/27	19	4.4	6.8	8.6
KIT CARSON (ID)	5020	2/24	24	7.6	9.2	-
KIWANIS CAMP	3720	2/28	0	.0	6.6	1.7
LAKE CREEK	6100	2/27	25	6.2	9.1	9.5
LAKEVIEW CANYON	6930	2/28	31	8.4	9.2	10.0
LAKEVIEW RIDGE	7400	2/28	28	7.2	8.2	9.7
LEMHI PASS	7480	2/27	28	6.6	9.8	8.1
LEMHI RIDGE	8100	2/27	30	7.7	10.3	8.9
LEMHI RIDGE PILLOW	8100	2/27	SP	7.3	10.2	9.0
LICK CREEK	6860	2/27	34	8.8	9.0	9.0
LICK CREEK PILLOW	6860	2/27	SP	7.7	7.8	6.6
LITTLE PARK	7400	2/25	48	12.4	13.4	14.6
LOGAN CREEK	4300	2/28	21	4.7	9.0	7.3
LOLO PASS (ID)	5230	2/25	61	21.5	31.0	27.5
LONE MOUNTAIN	8800	3/02	63	17.0	-	20.5
LOOKOUT (ID)	5250	2/28	62	20.6	27.8	31.0
LOST HORSE	5940	2/28	60	21.5	30.0	30.2
LOST SOUL	4800	2/25	38	10.6	12.9	15.6
LOWER TWIN	7900	2/29	49	14.1	18.0	18.7
LUBRECHT FLUME	4200	3/01	12	4.1	8.8	6.5
LUBRECHT FLUME PILLOW	5450	3/01	SP	3.7	8.2	6.4
LUBRECHT FOREST # 3	5450	2/29	14	3.5	9.0	7.0
LUBRECHT FOREST # 4	4650	2/29	6	1.6	5.2	3.5
LUBRECHT FOREST # 6	4040	2/29	8	1.9	6.0	4.0
LUBRECHT HYDROPLOT	4200	3/01	11	3.6	7.1	5.7
LUPINE CREEK (WY)	7300	2/28	29	5.8	9.8	9.9
MADISON PLATEAU	7750	2/25	59	16.8	19.4	17.0
MADISON PLATEAU PILLOW	7750	2/25	SP	18.0	20.4	18.7
MANY GLACIER	4960	2/27	45	14.4	18.1	-
MARIAS PASS	5250	2/29	37	11.4	17.4	16.3
MAYNARD CREEK	6210	2/28	29	8.0	22.1	12.6
MIDDLE MILL CREEK	7850	2/26	39	9.0	14.2	14.7
MILL CREEK	7500	2/29	49	8.5	-	12.0
MINERAL CREEK	4000	2/27	78	13.2	14.3	17.2
MIRROR LAKE #6 (AL)	6600	2/29	36	10.0	8.4	10.5
MONUMENT PEAK	8800	2/29	63	19.2	20.6	24.3
MONUMENT PEAK PILLOW	8800	2/29	SP	15.0	15.7	-
MOOSE CREEK (ID)	6200	2/29	35	9.6	14.8	15.6
MOULTON RESERVOIR	6850	2/29	30	6.6	6.2	-
MOUNT LOCKHART	6400	3/03	50	15.8	22.2	20.6
MOUNT LOCKHART PILLOW	6400	3/03	SP	16.1	19.8	18.2
MUDD LAKE	7650	2/27	48	15.1	16.9	18.7
NEW WORLD	6900	2/26	42	11.8	12.0	13.2
NEWTON MOUNTAIN	5600	2/27	71	26.0	25.0	-
NEZ PERCE CAMP	5580	2/24	37	9.6	16.4	13.8
NEZ PERCE CREEK	6500	2/28	20	5.1	6.8	7.0
NEZ PERCE PASS	6570	2/24	37	10.6	18.5	15.7
NOISY BASIN	6040	2/25	82	29.1	33.6	39.6
NOISY BASIN PILLOW	6040	2/25	SP	23.4	30.6	34.4
NORRIS BASIN (WY)	7500	2/28	32	9.0	8.4	10.1
NORTH FK. ELK CREEK	6250	3/01	29	7.9	13.0	11.7
NORTH FK. ELK CREEK PILL	6250	3/01	SP	8.5	12.2	11.9
NORTH FORK JOCKO	6330	3/02	73	26.7	38.7	41.1
NORTH MEADOW	7500	2/28	23	5.9	8.6	7.2
NORTHEAST ENTRANCE	7400	3/01	25	5.9	10.6	9.1
NORTHEAST ENTRANCE PILL.	7400	3/01	SP	6.7	10.3	8.7
NOTCH	8500	2/27	48	14.0	11.9	13.3
OLD FAITHFUL(WY)	7360	2/28	40	11.5	14.9	-
OPHIR PARK	7150	3/01	38	10.4	18.4	17.9
PALISADE CREEK	8250	2/27	64	21.6	-	-
PETERSON MEADOWS	7200	2/25	29	7.2	8.4	9.1
PETERSON MEADOWS PILLOW	7200	2/25	SP	6.3	7.5	9.1
PICKFOOT CREEK	6650	2/25	27	7.3	12.3	-
PICKFOOT CREEK PILLOW	6650	2/25	SP	6.2	10.9	-
PICNIC GROUNDS	6200	2/29	16	3.1	4.6	4.2
PIPESTONE PASS	7200	2/28	18	4.3	5.0	4.5
PIPESTONE UPPER #2 (AL)	5300	2/27	31	8.6	9.0	8.5
POORMAN CREEK	5100	2/25	59	20.5	33.1	32.4
POORMAN CREEK PILLOW	5100	2/25	SP	16.8	33.5	29.6
PORCUPINE	6500	2/26	20	5.1	8.9	6.7
PORCUPINE PILLOW	6500	2/26	SP	5.2	7.9	-
POTOMAGETON PARK	7150	2/26	38	10.0	13.4	13.4
RED MOUNTAIN	6000	2/29	46	14.2	15.1	17.5
RED TOP	5260	2/27	56	18.7	20.7	-
ROCK CREEK	5600	2/28	21	6.8	11.2	8.5
ROCK CREEK MEADOWS	8160	2/28	48	10.2	-	19.4
ROCKER PEAK	8000	3/03	38	10.6	13.4	13.7
ROCKER PEAK PILLOW	8000	3/03	SP	10.9	12.2	13.0
ROCKY BOY	4700	2/28	7	1.1	8.0	4.5
ROCKY BOY PILLOW	4700	2/28	SP	4.2	7.8	4.4
SACAJAWEA	6550	2/26	34	9.2	13.6	13.3
SADDLE MOUNTAIN	7940	2/27	52	17.0	20.8	22.9
SADDLE MOUNTAIN PILLOW	7940	2/27	SP	16.4	20.0	23.9
SENTINEL CREEK	8300	2/29	60	16.6	17.2	21.3
SHOWER FALLS	8100	2/27	52	15.2	17.7	21.4
SHOWER FALLS PILLOW	8100	2/27	SP	14.4	17.6	21.0
SILVER RUN	6630	3/03	20	3.6	4.6	4.5

SNOW SURVEY DATA CONTINUED

SNOW

DRAINAGE BASIN and/or SNOW COURSE NAME	Elevation	THIS YEAR Date of Survey	THIS YEAR Snow Depth (Inches)	THIS YEAR Water Content (Inches)	PAST RECORD Water Content (Inches) Last Year	PAST RECORD Water Content (Inches) Average
SILVER RUN PILLOW	6630	3/03	SP	5.0	4.9	-
SKALKAHO SUMMIT	7260	2/24	60	18.7	22.4	23.9
SKALKAHO SUMMIT PILLOW	7260	2/24	SP	17.3	20.2	-
SLAG-A-MELT LAKE	8750	2/27	59	17.9	19.2	24.2
SLIDE ROCK MOUNTAIN	7100	2/27	32	9.2	14.8	15.2
SMUGGLER MINE	6960	2/26	30	6.5	8.0	8.9
SOUTH FORK SHIELDS	8100	2/26	51	14.8	24.6	21.3
SOUTH FORK SHIELDS PILLO	8100	2/26	SP	11.0	-	-
SPOTTED BEAR MOUNTAIN	7000	2/24	33	9.9	15.7	14.6
SPUR PARK	8000	2/29	39	11.4	19.6	19.2
SPUR PARK PILLOW	8100	2/29	SP	12.4	20.0	20.0
STAHL PEAK	6050	3/01	82	29.4	28.0	36.8
STAHL PEAK PILLOW	6050	3/01	SP	26.0	22.7	29.8
STEMPLE PASS	6600	2/27	22	5.1	11.8	9.6
STORM LAKE	7780	2/25	33	8.4	10.3	11.6
STRYKER BASIN	6180	2/22	66	22.7	23.9	-
STUART MILL	6500	2/29	19	4.9	7.2	6.4
STUART MOUNTAIN	7400	3/02	65	23.3	20.9	29.3
SUCKER CREEK	3960	2/26	0	.0	.0	.7
SUGARLOAF	7350	2/28	25	7.8	9.5	9.5
SUNSET (ID)		2/27	76	24.3A	32.3	26.0
SYLVAN PASS (WY)	7100	3/01	39	10.0	11.6	12.2
TAYLOR ROAD	4080	2/28	0	.0	7.4	3.3
TEN MILE LOWER	6600	2/26	22	5.5	9.2	6.8
TEN MILE MIDDLE	6800	2/26	31	7.8	11.2	10.3
TEN MILE UPPER	8000	2/26	32	8.5	13.0	12.8
TEPEE CREEK	8000	2/27	39	10.1	13.4	14.0
TEPEE CREEK PILLOW	8000	2/27	SP	9.3	12.0	11.1
THUMB DIVIDE (WY)	7900	2/27	51	15.1	16.0	18.2
TIMBERLINE CREEK	8850	3/03	43	11.1	6.8	13.0
TRAIL CREEK	7090	2/27	27	6.7	9.4	7.3
TRINKUS LAKE	6100	2/24	76	26.7	38.0	40.2
TV MOUNTAIN	6800	3/02	38	11.6	18.6	17.2
TWELVEMILE CREEK	5600	2/28	44	15.8	23.5	21.1
TWELVEMILE CREEK PILLOW	5600	2/28	SP	.0	16.6	17.7
TWENTY-ONE MILE	7150	2/28	38	10.0	14.4	16.6
TWIN CREEKS	3580	2/24	22	6.3	14.1	12.0
TWIN LAKES	6510	2/28	78	29.4	38.3	38.2
TWIN LAKES PILLOW	6400	2/26	SP	28.9	35.5	37.7
UPPER HOLLAND LAKE	6200	3/02	64	19.8	30.6	33.7
WALDRON	5600	3/03	22	6.6	10.0	10.1
WALDRON PILLOW	5600	3/03	SP	6.9	8.8	10.1
WARM SPRINGS	8250	2/27	42	12.6	15.3	-
WARM SPRINGS PILLOW	8250	3/01	EST	15.5	16.5	-
WEASEL DIVIDE	5450	3/01	68	24.9	22.4	32.4
WEST ROSEBUD	7500	2/28	34	10.3	12.1	9.8
WEST YELLOWSTONE	6700	2/27	33	8.6	11.4	11.1
WHISKEY CREEK	6800	2/25	55	15.6	19.0	17.9
WHISKEY CREEK PILLOW	6800	2/25	SP	12.2	15.1	14.9
WHITE MILL	8700	2/29	66	18.8	25.0	25.0
WHITE MILL PILLOW	8700	2/29	SP	17.6	23.1	20.8
WHITE PINE RIDGE	8850	2/27	22	4.8	6.5	4.6
WILLOW CREEK	6500	2/28	32	8.6	8.6	8.7
WOLVERINE (WY)	7650	2/27	36	9.7	15.8	10.7
WRONG CREEK	5700	2/28	29	7.8	14.8	13.4
WRONG RIDGE	6800	2/29	42	12.8	17.4	18.3

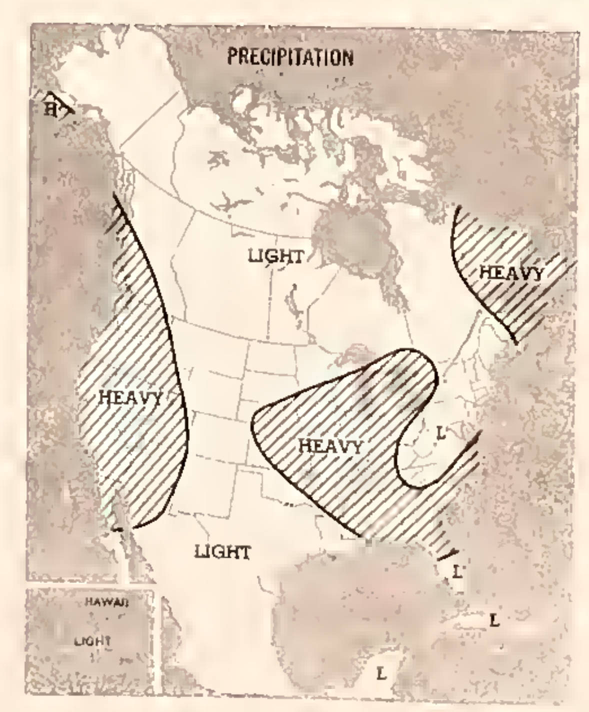
LATE ARRIVING DATA

Name	Elevation	Date of Survey	Snow Depth	Water Content	Last Year	Average
BADGER PASS PILLOW	6900	2/24	SP	22.6	--	--
BASIN CREEK PILLOW	7180	2/27	SP	5.2	--	--
CLOVER MEADOW PILLOW	8600	2/27	SP	12.3	--	--
LAKEVIEW RIDGE PILLOW	7400	2/28	SP	6.9	--	--
MANY GLACIER PILLOW	4960	2/27	SP	12.9	15.9	--
MAYNARD CREEK PILLOW	6210	2/28	SP	7.8	9.4	10.0
WOOD CREEK	5960	2/29	31	7.9	--	--
WOOD CREEK PILLOW	5960	2/29	SP	7.5	--	--

Average based on 1963-77 period. A - Aerial observation; water content estimated.
SP - Snow Pillow observation; water content only.

average monthly weather outlook

FOR MARCH 1980



The NWS estimates that temperatures for March, 1980, will be near average for all of Montana.

Provided by USDC, NOAA, NWS

RESERVOIR STORAGE (Thousand Acre Feet) END OF MONTH

Basin or Stream	Reservoir	Usable Capacity	Usable Storage This Year	Usable Storage Last Year	Usable Storage Average
	COLUMBIA				
Kootenai	Koocanusa	5,694.0	2,810.0	2,329.0	--
Flathead	Hungry Horse	3,428.0	2,430.0	2,236.0	2,200.0
	Flathead Lake	1,791.0	636.2	625.6	994.6
	Camas (4)	45.2	16.7	18.5	21.9
Clark Fork	Mission Valley (8)	100.3	28.6	55.8	38.7
	Georgetown Lake	31.0	24.7	26.1	25.6
	Lower Willow Creek	4.9	1.4	.2	1.7
	Nevada Creek	12.6	2.9	6.5	5.5
	Noxon Rapids	334.6	264.4	310.3	299.1
Bitterroot	Painted Rocks	31.7	--	13.9	17.4
	Como	34.9	--	--	13.6
	MISSOURI				
Beaverhead	Lima	84.0	14.0	32.4	40.2
Ruby	Clark Canyon	257.2	151.4	156.6	137.9
Madison	Ruby	38.8	14.9	--	27.7
	Hebgen Lake	377.5	269.8	241.0	243.3
Gallatin	Ennis Lake	41.0	28.9	34.7	35.4
Missouri	Middle Creek	8.0	3.1	3.4	3.6
	Canyon Ferry	2,043.0	1,479.0	1,387.0	1,606.0
	Hauser & Helena	61.9	63.4	52.5	60.6
	Lake Helena	10.4	10.9	11.1	10.0
	Holter Lake	81.9	81.0	79.7	64.6
	Fort Peck Lake	18,910.0	15,810.0	16,760.0	15,370.0
Smith	Smith River	10.6	6.8	--	7.2
	Newlan Creek	12.4	8.6	9.7	--
Musselshell	Bair	7.0	5.6	--	4.9
	Martinsdale	23.1	11.3	--	9.9
	Deadman's Basin	72.2	--	--	49.4
Sun	Gibson	99.0	35.6	71.0	44.6
	Willow Creek	32.2	23.6	25.2	21.8
	Pishkun	32.0	18.6	19.7	16.4
Marias	Lower Two Medicine	11.9	--	--	5.8
	Four Horns	19.2	--	--	13.1
	Swift	30.0	12.9	20.4	15.4
	Lake Frances	111.9	62.5	93.5	71.0
Milk	Elwell (Tiber)	1,347.0	516.1	500.3	538.9
	Beaver Creek	3.5	2.7	1.6	1.5
	Fresno	127.2	42.2	69.7	66.4
	Nelson	66.8	40.3	44.0	41.9
	HUDSON BAY				
St. Mary's	Lake Sherburne	66.2	18.8	25.8	22.5
	YELLOWSTONE				
Stillwater	Mystic Lake	21.0	2.5	15.1	7.2
Clark's Fork	Cooney	27.4	15.4	13.6	15.3
Tongue	Tongue River	68.0	--	17.3	37.0
Bighorn	Bighorn Lake	1,356.0	881.4	839.5	527.8

Average based on 1963-77 period.

MOST CURRENT DATA
March 1, 1980

MISSOURI RIVER BASIN
Above
Canyon Ferry Dam

DATE	PERCENT SNOW COVER	AVERAGE SNOWLINE ELEVATION IN FEET
November 6, 1979	45	6830
November 12, 1979	45	6830
November 20, 1979	84	5120
November 29, 1979	89	4830
December 11, 1979	80	5340
December 18, 1979	60E	6250
December 23, 1979	88	4890
December 30, 1979	72	5720
January 6, 1980	100	3800
January 16, 1980	70E	5820
January 19, 1980	96	4300
January 28, 1980	93	4530
February 8, 1980	92.5	4570
February 16, 1980	100	3800
February 25, 1980	81	5290
March 1, 1980	90	4760

Columbia River Drainage

BASIN, STREAM and/or FORECAST POINT	PERIOD	THIS YEAR FORECAST Thousand Acre Feet	THIS YEAR FORECAST Percent of Average	PAST RECORD THOUSAND ACRE FEET Last Year	PAST RECORD THOUSAND ACRE FEET Average
		APRIL - SEPTEMBER			
KOOTENAI RIVER below Libby Dam		6,220	86	4,459	7,246
FISHER RIVER near Libby		167	62		270
YAAK RIVER near Troy		340	63		537
KOOTENAI RIVER at Leonia (1)		7,270	82	5,606	8,883
INFLOW MOULTON RESERVOIR nr BUTTE (Million Gallons)					
WARM SPRINGS CREEK AT MEYERS DAM near Anaconda (2)		32.5	64	31.4	50.7
FLINT CREEK near Southern Cross (3)		9.9	54		18.5
FLINT CREEK below Boulder Creek (4)		46.4	60		77.6
INFLOW LOWER WILLOW CREEK RESERVOIR near Hall (5)		7.5	44	10.6	16.9
MIDDLE FORK ROCK CREEK near Philipsburg		54.5	69		78.8
NEVADA CREEK near Flinn		8.5	36		23.6
BLACKFOOT CREEK near Bonner		620	61		1,017
CLARK FORK RIVER above Milltown (6)		530	63		843
CLARK FORK RIVER above Missoula		1,150	62	1,434	1,859
WEST FORK BITTERROOT RIVER near Conner (7)		95.0	51		187
BITTERROOT RIVER near Darby		330	55		602
SKALKAHO CREEK near Hamilton		37.5	65		57.4
BURNT FORK CREEK near Stevensville		26.5	68		38.8
BITTERROOT RIVER at Missoula (9)		910	59		1,543
CLARK FORK RIVER below Missoula		2,060	60		3,405
CLARK FORK RIVER at St. Regis		2,710	60	3,607	4,521
NORTH FORK FLATHEAD RIVER near Columbia Falls		1,480	75		1,969
MIDDLE FORK FLATHEAD RIVER near West Glacier		1,420	74	1,709	1,911
SOUTH FORK FLATHEAD RIVER near Columbia Falls		1,630	71	2,020	2,302
FLATHEAD RIVER at Columbia Falls (10)		4,650	73	5,271	6,330
SWAN RIVER near Big Fork		475	70		681
FLATHEAD RIVER near Polson (11)		5,460	74	6,186	7,394
CLARK FORK RIVER near Plains (11)		8,370	68	10,150	12,340
THOMPSON RIVER near Thompson Falls		168	64		263
PROSPECT CREEK at Thompson Falls		92.0	64		143
CLARK FORK RIVER at Whitehorse Rapids		9,240	67		13,781

BASIN, STREAM and/or FORECAST POINT	PERIOD	THIS YEAR FORECAST Thousand Acre Feet	THIS YEAR FORECAST Percent of Average	PAST RECORD THOUSAND ACRE FEET Last Year	PAST RECORD THOUSAND ACRE FEET Average
		APRIL - JULY			
KOOTENAI RIVER below Libby Dam		5,300	86	3,853	6,178
FISHER RIVER near Libby		155	61		253
YAAK RIVER near Troy		310	60		514
KOOTENAI RIVER at Leonia (1)		6,320	82	4,908	7,727
INFLOW MOULTON RESERVOIR nr BUTTE (Million Gallons)		115	40	244	286
WARM SPRINGS CREEK AT MEYERS DAM near Anaconda (2)		26.5	64	24.4	41.2
FLINT CREEK near Southern Cross (3)		8.2	53		15.4
FLINT CREEK below Boulder Creek (4)		35.4	58		61.3
INFLOW LOWER WILLOW CREEK RESERVOIR near Hall (5)		7.0	44	9.9	16.0
MIDDLE FORK ROCK CREEK near Philipsburg		49.0	69		71.1
NEVADA CREEK near Flinn		7.8	36		21.8
BLACKFOOT CREEK near Bonner		530	58		920
CLARK FORK RIVER above Milltown (6)		450	62		730
CLARK FORK RIVER above Missoula		980	59	1,284	1,651
WEST FORK BITTERROOT RIVER near Conner (7)		86.0	50		172
BITTERROOT RIVER near Darby		292	53		552
SKALKAHO CREEK near Hamilton		32.0	64		49.8
BURNT FORK CREEK near Stevensville		23.0	68		33.6
BITTERROOT RIVER at Missoula (9)		832	59		1,416
CLARK FORK RIVER below Missoula		1,812	59		3,069
CLARK FORK RIVER at St. Regis		2,440	60	3,296	4,078
NORTH FORK FLATHEAD RIVER near Columbia Falls		1,330	75		1,782
MIDDLE FORK FLATHEAD RIVER near West Glacier		1,310	75	1,591	1,750
SOUTH FORK FLATHEAD RIVER near Columbia Falls		1,510	70	1,933	2,159
FLATHEAD RIVER at Columbia Falls (10)		4,300	74	4,948	5,827
SWAN RIVER near Big Fork		415	70		596
FLATHEAD RIVER near Polson (11)		5,030	74	5,803	6,806
CLARK FORK RIVER near Plains (11)		7,610	68	9,441	11,222
THOMPSON RIVER near Thompson Falls		145	62		234
PROSPECT CREEK at Thompson Falls		83.0	62		133
CLARK FORK RIVER at Whitehorse Rapids		8,390	67		12,519

BASIN, STREAM and/or FORECAST POINT	PERIOD	THIS YEAR FORECAST Thousand Acre Feet	THIS YEAR FORECAST Percent of Average	PAST RECORD THOUSAND ACRE FEET Last Year	PAST RECORD THOUSAND ACRE FEET Average
		APRIL - JUNE			
KOOTENAI RIVER below Libby Dam					
FISHER RIVER near Libby					
YAAK RIVER near Troy					
KOOTENAI RIVER at Leonia (1)		5,050	82	4,113	6,150
INFLOW MOULTON RESERVOIR nr BUTTE (Million Gallons)		105	40	235	260
WARM SPRINGS CREEK AT MEYERS DAM near Anaconda (2)					
FLINT CREEK near Southern Cross (3)					
FLINT CREEK below Boulder Creek (4)					
INFLOW LOWER WILLOW CREEK RESERVOIR near Hall (5)					
MIDDLE FORK ROCK CREEK near Philipsburg					
NEVADA CREEK near Flinn					
BLACKFOOT CREEK near Bonner		450	57		794
CLARK FORK RIVER above Milltown (6)		380	62		613
CLARK FORK RIVER above Missoula		830	59	1,153	1,408
WEST FORK BITTERROOT RIVER near Conner (7)					
BITTERROOT RIVER near Darby		260	54		480
SKALKAHO CREEK near Hamilton					
BURNT FORK CREEK near Stevensville					
BITTERROOT RIVER at Missoula (9)		720	59		1,211
CLARK FORK RIVER below Missoula		1,550	59		2,618
CLARK FORK RIVER at St. Regis		2,090	60	2,970	3,492
NORTH FORK FLATHEAD RIVER near Columbia Falls		1,110	74		1,498
MIDDLE FORK FLATHEAD RIVER near West Glacier		1,100	75	1,405	1,470
SOUTH FORK FLATHEAD RIVER near Columbia Falls		1,320	70	1,775	1,884
FLATHEAD RIVER at Columbia Falls (10)		3,700	75	4,460	4,964
SWAN RIVER near Big Fork					
FLATHEAD RIVER near Polson (11)		4,250	74	5,188	5,779
CLARK FORK RIVER near Plains (11)		6,450	68	8,483	9,507
THOMPSON RIVER near Thompson Falls					
PROSPECT CREEK at Thompson Falls					
CLARK FORK RIVER at Whitehorse Rapids		7,100	67		10,633

1. Adjusted for storage in Lake Koocanusa
2. Adjusted for storage in Silver Lake, diversions to and pumping from Georgetown Lake
3. Adjusted for storage in Georgetown Lake diversions from and pumping to Silver Lake
4. Sum Flint Creek at Maxville and Boulder Creek at Maxville
5. Sum of North Fork Lower Willow Creek near Hall and South Fork Lower Willow Creek near Hall
6. Difference in observed flow Clark Fork above Missoula and Blackfoot near Bonner
7. Adjusted for storage in Painted Rocks Reservoir
8. Adjusted for diversion into Sunset Highline Canal
9. Difference in observed flow Clark Fork above and below Missoula
10. Adjusted for storage in Hungry Horse Reservoir
11. Adjusted for storage in Hungry Horse Reservoir and Flathead Lake
12. Adjusted for storage in Hungry Horse Reservoir, Flathead Lake and Noxon Rapids Reservoir

ALL FORECASTS PREPARED IN COOPERATION
WITH THE NATIONAL WEATHER SERVICE

WATER SUPPLY OUTLOOK

Expressed as "Poor, Fair, Average, Excellent" With Respect to Usual Supply

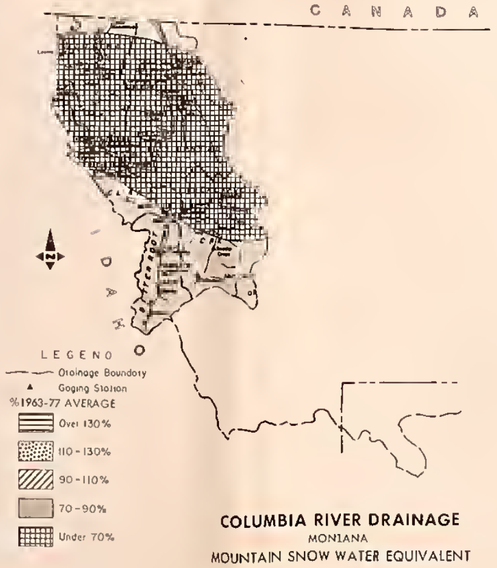
STREAM or AREA	Flow Period: Spring Season	Flow Period: Late Season
Tobacco	fair	fair
Little Bitterroot	fair	poor
Missian Valley	fair	fair
Flint Creek	fair	poor
Upper Clark Fork	fair	poor
Nevada Creek	fair	poor
Blackfoot	fair	poor
West-side Bitterroot	fair	poor
East-side Bitterroot	fair	poor
Bitterroot River	fair	poor
Lower Clark Fork	fair	poor

STREAMFLOW FORECASTS

Streams in the Clark Fork River drainage and tributory streams of the Kootenai River are forecast to have spring and summer runoff between 55 to 65 percent of average. Generally, runoff is not expected to be as low as in 1977, but will be comparable to other low years like 1973 and 1966.

Most of the Flathead River drainages are expected to produce a little more runoff, but still only in the 70 to 75 percent average range. The Canadian snowpack is near average causing the Kootenai River, with much of its headwaters in Canada, to be forecast at 80 to 85 percent of its average runoff.

Mid-to-late season irrigation water will be in short supply on almost all streams. Good irrigation water management will be needed to minimize the impact of the season's short supply.



COLUMBIA RIVER DRAINAGE
MONTANA
MOUNTAIN SNOW WATER EQUIVALENT

SUMMARY of SNOW MEASUREMENTS

(COMPARISON WITH PREVIOUS YEARS)

RIVER BASIN and/or SUBWATERSHED	Number of Courses Averaged	THIS YEAR'S SNOW WATER AS PERCENT OF Last Year	THIS YEAR'S SNOW WATER AS PERCENT OF Average
Kootenai/BC	18	120	90
Kootenai/Montana	20	84	71
Kootenai	38	95	77
Little Bitterroot	5	54	68
Flathead	33	76	71
Clark Fork above Blackfoot	31	71	72
Blackfoot	17	60	63
Clark Fork above Missoula	48	66	69
Bitterroot	14	74	76
Lower Clark Fork below Missoula	14	72	70
Clark Fork (Total w/o Flathead)	76	70	71
Pend O'Reille (Clark Fork & Flathead)	109	72	71
Columbia (Pend O'Reille & Kootenai)	133	78	72

MOUNTAIN SNOWPACK

Some improvement in snowpack conditions occurred in the upper Clark Fork River drainage. Some deterioration was observed in parts of the Flathead and Kootenai River headwaters.

Snowpack is comparable to the low years 1960, 1961, 1966 and 1973, but is generally not as low as in 1977. The long range weather outlook is not favorable for any significant improvement during March.

Currently, most of the Bitterroot, upper Clark Fork headwaters, and a narrow band near the Canadian border have 70 to 80 percent of average snowpack. Generally, all other areas have snow cover 55 to 65 percent of average.

Melt has started at lower elevations with many low-elevations, south-facing slopes going bare near the end of February. Soils under the snowpack are drier than normal.

STATE-FEDERAL-PRIVATE
COOPERATIVE SNOW SURVEYS

Footer: MONTANA WATER SUPPLY OUTLOOK Page 4

Yellowstone River Drainage

MOUNTAIN SNOWPACK

The snowpack in most areas remained about the same as last month. Snow in the headwaters of Rock Creek, Red Lodge Creek and the Clark's Fork River did improve during February. Some areas now have near-to-above average pack. Areas showing decreases are the north end of the Bighorn Mountains and along the main stem of the Yellowstone River between Yellowstone National Park and Livingston.

The snowpack in most of the main, water-producing zone of the Yellowstone River is 70 to 80 percent of average.

Soil under the snowpack remain drier than normal.

SUMMARY of SNOW MEASUREMENTS

(COMPARISON WITH PREVIOUS YEARS)

RIVER BASIN and/or SUBWATERSHED	Number of Courses Averaged	THIS YEAR'S SNOW WATER AS PERCENT OF Last Year	THIS YEAR'S SNOW WATER AS PERCENT OF Average
Upper Yellowstone ab Livingston	12	78	75
Shields	6	56	64
Boulder 6 Stillwater	4	87	81
Rock Creek & Clark's Fork	12	83	84
Yellowstone (ab Bighorn River)	34	76	77
Bighorn/Wyoming	31	83	85
Little Bighorn	4	60	64
Bighorn (Total)	35	81	83
Tongue	9	75	71
Powder	6	86	78
Yellowstone (Total	84	78	79

WATER SUPPLY OUTLOOK

Expressed as "Poor, Fair, Average, Excellent" With Respect to Usual Supply

STREAM or AREA	Flow Period: Spring Season	Flow Period: Late Season
Yellowstone at Livingston	fair	fair
Shields	fair	poor
Boulder	fair	fair
Sweetgrass - Big Timber	fair	poor
Stillwater	fair	fair
Rock Creek	fair	fair
Clark's Fork	fair	fair
Yellowstone above Bighorn	fair	fair
Bighorn	fair	fair
Little Bighorn	fair	poor
Tongue	fair	poor
Powder	fair	fair
Lower Yellowstone	fair	fair

STREAMFLOW FORECASTS

Runoff is forecast to be higher than the low year of 1977, but similar to the other low years of 1960, 1961, 1966 and 1973. Spring and summer runoff is forecast to be 70 to 75 percent of average on the Yellowstone River above the Bighorn River and on tributary streams. The Stillwater River and Red Lodge Creek, which drain the front face of the Beartooth Mountains, and the Bighorn River are expected to have slightly higher runoff than other streams in the drainage.

Less runoff is expected from streams draining the Crazy Mountains and from the Little Bighorn River.

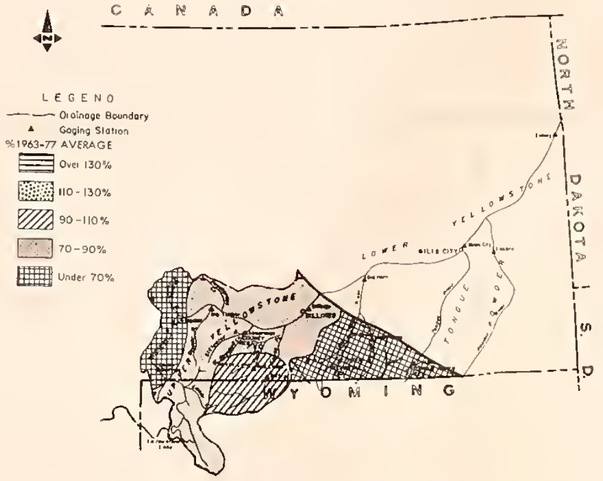
Mid-to-late season irrigation water supplies will be short on most streams. Good irrigation water management will be necessary to minimize the impacts of this season's short water supply.

BASIN, STREAM and/or FORECAST POINT	PERIOD	THIS YEAR FORECAST Thousand Acre Feet	THIS YEAR FORECAST Percent of Average	PAST RECORD THOUSAND ACRE FEET Last Year	PAST RECORD THOUSAND ACRE FEET Average
		APRIL - SEPTEMBER			
YELLOWSTONE RIVER at Corwin Springs		1,480	70	1,809	2,102
YELLOWSTONE RIVER near Livingston		1,720	70		2,471
BOULDER RIVER at Big Timber		290	70		416
STILLWATER near Absarokee (1)		530	80		660
CLARKS FORK RIVER near Belfry		460	71		644
ROCK CREEK near Red Lodge		86.0	73	105	118
INFLOW COONEY RESERVOIR near Boyd (2)		54.0	84		64.5
YELLOWSTONE RIVER at Billings		3,271	70	3,882	4,682
BIGHORN RIVER near St. Xavier (3)		1,722	85	1,295	2,034
LITTLE BIGHORN RIVER near Hardin		125	64		196
YELLOWSTONE RIVER at Miles City (4)		5,181	73		7,142
YELLOWSTONE RIVER near Sidney (5)		5,630	72		7,806

BASIN, STREAM and/or FORECAST POINT	PERIOD	THIS YEAR FORECAST Thousand Acre Feet	THIS YEAR FORECAST Percent of Average	PAST RECORD THOUSAND ACRE FEET Last Year	PAST RECORD THOUSAND ACRE FEET Average
		APRIL - JULY			
YELLOWSTONE RIVER at Corwin Springs		1,230	70	1,555	1,749
YELLOWSTONE RIVER near Livingston		1,410	69		2,048
BOULDER RIVER at Big Timber		265	69		382
STILLWATER near Absarokee (1)		440	79		555
CLARKS FORK RIVER near Belfry		408	72		564
ROCK CREEK near Red Lodge		64.0	70	81.0	91.4
INFLOW COONEY RESERVOIR near Boyd (2)		44.0	84		52.5
YELLOWSTONE RIVER at Billings		2,780	70	3,647	3,979
BIGHORN RIVER near St. Xavier (3)		1,580	85	1,143	1,861
LITTLE BIGHORN RIVER near Hardin		110	64		174
YELLOWSTONE RIVER at Miles City (4)		4,500	72		6,243
YELLOWSTONE RIVER near Sidney (5)		4,850	71		6,805

ALL FORECASTS PREPARED IN COOPERATION
WITH THE NATIONAL WEATHER SERVICE

1. Adjusted for storage in Mystic Lake
2. Adjusted for storage in Cooney Reservoir.
3. Adjusted for storage in Buffalo Bill Boysen, Bull Lake, Pilot Butte & Bighorn Reservoirs
4. Adjusted for storage in Buffalo Bill Boysen Bull Lake Pilot Butte, Bighorn & Tongue River Reservoirs
5. Adjusted for reservoirs in 4, and diversions into the Lower Yellowstone Canal.



YELLOWSTONE RIVER DRAINAGE
MONTANA
MOUNTAIN SNOW WATER EQUIVALENT

PUBLIC MEETINGS

Montana has received over 200 responses commenting on the Snow Survey and Water Supply Forecast program. These responses were summarized and forwarded to the western regional office in Portland where they will be combined with comments from the other western states. This information will be used to develop recommendations which will be forwarded to the Washington office.

We appreciate the time that each of you took to inform us of your desires and feelings and thank you for your support of this program.

WATER SUPPLY SHORTAGE

Water supplies are forecast to be well below normal throughout most of Montana this season. There will be adequate streamflow from the main snowmelt period early in the season. However, water levels will drop earlier than usual and be less than usual throughout most of the irrigation period. Advance preparation can lessen the impacts of water shortages on agricultural operations.

Irrigators may want to start checking sprinkler equipment now. Make sure pumps, pipes and sprinklers are in good condition and can operate efficiently at recommended pressures. Keep ditches and headgates clean and in good repair to maximize delivery rates and minimize evaporation and bank losses. Use the most efficient irrigation practices possible.

On units with limited water supplies, it may be advantageous to plant income producing crops only on the better land. Fallow land for weed control or water savings. Consider early maturing crops that require less water. Some small grains can be irrigated once and cut for hay. Seed production may be an alternative.

Stockmen may want to change their rotational grazing patterns to take advantage of hardy stands and plants that remain palatable later in the season. Herd size can be reduced to a size compatible with reduced forage production or additional pasture and hay obtained earlier than usual.

Snow surveys and SNOTEL are being used to monitor current conditions and any change in the overall outlook. Check with your local conservation district office for current conditions and assistance with your water and soil conservation problems.

Footer: MONTANA WATER SUPPLY OUTLOOK Page 5

Currently, most of the Bitterroot,

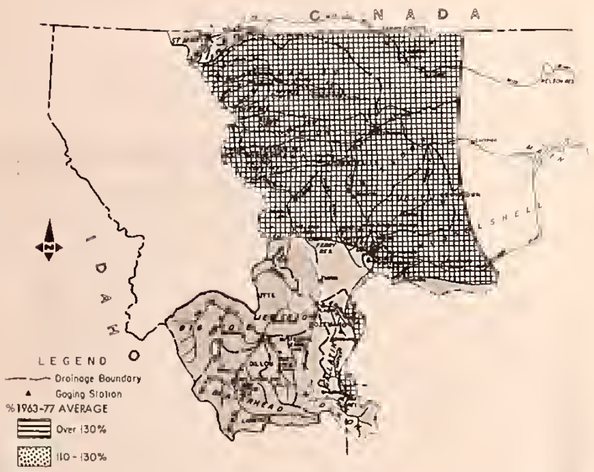
Missouri River & Hudson Bay Drainages

BASIN, STREAM and/or FORECAST POINT	THIS YEAR FORECAST Thousand Acre Feet	THIS YEAR FORECAST Percent of Average	PAST RECORD THOUSAND ACRE FEET Last Year	PAST RECORD THOUSAND ACRE FEET Average	THIS YEAR FORECAST Thousand Acre Feet	THIS YEAR FORECAST Percent of Average	PAST RECORD THOUSAND ACRE FEET Last Year	PAST RECORD THOUSAND ACRE FEET Average
PERIOD	APRIL - SEPTEMBER				APRIL - JULY			
RED ROCK RIVER near Monida (1)	76.0	69	102	110	71.0	69	93.4	103
BEAVERHEAD RIVER near Grant (2)	90.0	53		171	75.0	51		148
BEAVERHEAD RIVER at Barretts (2)	128	57		226	105	54		196
RUBY RIVER near Alder	73.5	70		105	62.0	70		89.0
BIG HOLE RIVER near Melrose	430	54		792	400	55		730
BOULDER RIVER near Boulder	67.0	65	89.4	103	64.0	66	84.9	96.7
WILLOW CREEK near Harrison	9.3	43		21.5	8.5	44		19.2
MADISON RIVER near Grayling (3)	405	77	382	523	315	77	296	409
MADISON RIVER near McAllister (4)	680	76	641	892	545	77	512	706
GALLATIN RIVER near Gateway	398	70		572	340			488
INFLOW MIDDLE CREEK RESERVOIR near Bozeman (5)	22.0	73	25.0	30.3	19.0	73	22.0	26.2
HYALITE CREEK near Bozeman (6)	33.5	71		47.4	29.2	71		41.0
GALLATIN RIVER at Logan	345	53		649	290	52		557
MISSOURI RIVER at Toston (7)	1,489	56	1,980	2,671	1,310	56	1,718	2,330
SHEEP CREEK near White Sulphur Springs	12.5	55	23.9	22.8	10.5	53	20.7	19.8
SUN RIVER at Gibson Dam (8)	300	52	471	580	270	51	428	529
BELT CREEK near Monarch	67.0	46		146	60.0	45		134
MISSOURI RIVER at Fort Benton (9)	1,982	48		4,148	1,750	48		3,640
TWO MEDICINE CREEK near Browning (10)	175	68		259	166	68		244
BADGER CREEK near Browning	88.0	66		133	74.0	64		116
MARIAS RIVER near Shelby	367	64	468	577	340	64	443	532
MISSOURI RIVER at Virgelle (11)	2,331	49		4,793	2,080	49		4,238
SOUTH FORK JUDITH RIVER near Utica	Stream gaging station discontinued by USGS							
MISSOURI RIVER near Landusky (11)	2,543	49		5,214	2,250	49		4,586
NORTH FORK MUSSELSHELL RIVER near Delpine	2.6	41		6.4	2.0	36		5.5
SOUTH FORK MUSSELSHELL RIVER above Martinsdale	31.0	50		61.5	24.5	43		57.6
MISSOURI RIVER below Fort Peck Dam (11)	2,368	48		4,929	2,100	48		4,381
MILK RIVER at Eastern Crossing	254*	92		278*				
INFLOW LAKE SAKAKAWEA, ND (11)	8,136	60		13,450	7,350	60		12,239
SAKATCHEWAN RIVER BASIN								
SWIFT CURRENT CREEK at Sherburne (12)	109	83		132	94.0	82		115
ST. MARY'S RIVER near Babb (12)	410	82		498	350	82		426

*For the period March - September

1. Adjusted for storage in Lima Reservoir.
2. Adjusted for storage in Lima & Clark Canyon Reservoirs
3. Adjusted for storage in Hebgen Lake.
4. Adjusted for storage in Hebgen Lake & Ennis Lake.
5. Sum West Fork Hyalite Creek & East Fork Hyalite Creek above the reservoir.
6. Adjusted for storage in Middle Creek Reservoir.
7. Adjusted for storage in Lima, Hebgen, Ennis, & Clark Canyon Reservoirs.
8. Adjusted for storage in Gibson Reservoir & diversions.
9. Adjusted for storage in Lima, Clark Canyon, Hebgen, Ennis, Gibson, Pishkun, Willow Creek, & Canyon Ferry.
10. Adjusted for storage in Two Medicine Reservoir & diversions in Two Medicine Canal.
11. Adjusted for all upstream reservoirs
12. Adjusted for storage in Lake Sherburne.

ALL FORECASTS PREPARED IN COOPERATION WITH THE NATIONAL WEATHER SERVICE



MISSOURI RIVER & HUDSON BAY DRAINAGES
MONTANA
MOUNTAIN SNOW WATER EQUIVALENT

MOUNTAIN SNOWPACK

There was slight improvement in the snowpack in the southwest portion of the drainage. The snowpack is not as low as the record low year of 1977, but it is comparable to the low years of 1961, 1966 and 1973.

Areas above Canyon Ferry have 70 to 80 percent average. With the exception of the St. Mary's and Milk River headwaters, all areas north of Canyon Ferry Reservoir and the Judith and Musselshell River drainages have very low snowpack. Most of these areas show 50 to 70 percent of normal snow cover on the watersheds for March 1. The Marias River headwaters showed a decreased snowpack during February.

Some melting occurred at lower elevations in February. Many areas to the north and east of Helena received less than normal snowfall in February.

The long range forecast issued by the National Weather Service does not indicate any improvement can be expected during March. Soils under the snowpack remain drier than normal.

STREAMFLOW FORECASTS

Most forecasts in the Missouri River headwaters are one to three percent higher than those issued last month. However, forecasts on the Missouri River and tributaries below Canyon Ferry Reservoir are two to five percent lower. Runoff is expected to be higher than the low year of 1977, but will be similar to the other low years of 1960, 1961, 1963, 1966 and 1973. If present snowfall patterns continue and spring precipitation is below average, many streams could have the second lowest runoff of record.

The April-through-September runoff is forecast to be about half the average on most streams. The Ruby and Gallatin Rivers are forecast to have about 70 percent average runoff. The Madison River, which has a large base flow from springs and geysers in Yellowstone National Park, will have a higher percent runoff.

The St. Mary's River, with most of its headwaters in Glacier National Park, is forecast to have about 80 percent of average streamflow. The Milk River receives about 60% of its water from diversion through the St. Mary's canal and is forecast to produce runoff about 10 percent below average.

Mid-to-late season irrigation water will be in short supply on most streams that do not have stored water. It will be necessary for all water users to practice good water conservation in order to minimize the impact of this year's short water supply.

SUMMARY of SNOW MEASUREMENTS
(COMPARISON WITH PREVIOUS YEARS)

RIVER BASIN and/or SUBWATERSHED	Number of Courses Averaged	THIS YEAR'S SNOW WATER AS PERCENT OF Last Year	THIS YEAR'S SNOW WATER AS PERCENT OF Average (*)
Beaverhead	17	84	81
Ruby	8	85	78
Big Hole	19	82	74
Boulder	10	69	77
Jefferson	54	81	77
Madison	22	84	80
Gallatin	15	79	73
Missouri Headwater	91	82	77
West-side Missouri (Toston-Cascade)	7	62	74
Smith & Belt	6	64	67
Missouri Main-stem	13	63	70
Teton & Sun	8	62	67
Marias	4	66	66
Marias-Teton-Sun	12	64	66
Judith	6	57	63
Musselshell	5	63	71
Judith-Musselshell	11	59	66
Milk	6	29	48
Bear Paws	5	12	26
Missouri (Total)	133	74	74
Saskatchewan			
St. Mary's	2	78	73
Bow River in Alberta	3	104	97

WATER SUPPLY OUTLOOK Expressed as "Poor, Fair, Average, Excellent" with Respect to Usual Supply

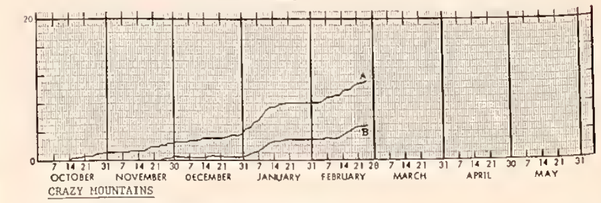
STREAM or AREA	Flow Period: Spring Season	Flow Period: Late Season
Beaverhead	fair	poor
Ruby	fair	fair
Big Hole	fair	poor
Boulder	fair	poor
Jefferson	fair	poor
Madison	fair	fair
Gallatin	fair	fair
West-side Missouri	fair	poor
Smith-Belt	fair	poor
Sun	fair	poor
Teton	fair	poor
Marias	fair	poor
Judith	fair	poor
Musselshell	fair	poor
Milk	fair	fair
Bear Paws	fair	poor
St. Mary's	fair	fair

U.S. DEPARTMENT of AGRICULTURE
SOIL CONSERVATION SERVICE
CONSERVATION OF WATER BEGINS WITH THE SNOW SURVEY

SNOW SURVEY DATA

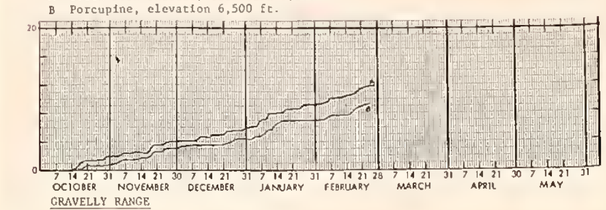
SNOW PILLOW RECORDS

Snow pillows are butyl or metal containers that are placed on the ground and used to determine the amount of water in the snowpack without disturbing the snow. Continuous records of snow accumulation and melt can be obtained with on-site recorders or by radio telemetry such as SNOTEL. These graphs show water equivalent for this season's snowpack. You will note that the snow began accumulating in late October or early November at most locations.



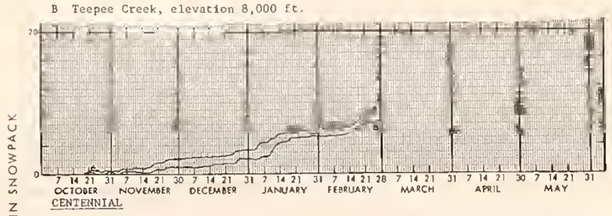
CRAZY MOUNTAINS

A South Fork Shields, elevation 8,100 ft.
B Porcupine, elevation 6,500 ft.



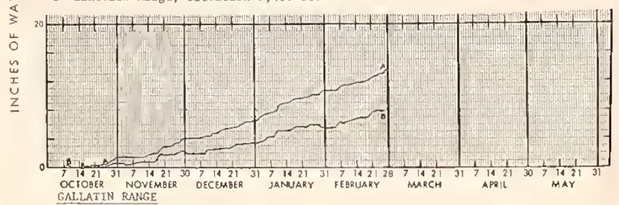
GRAVELLY RANGE

A Clover Meadow, elevation 8,800 ft.
B Teepee Creek, elevation 8,000 ft.



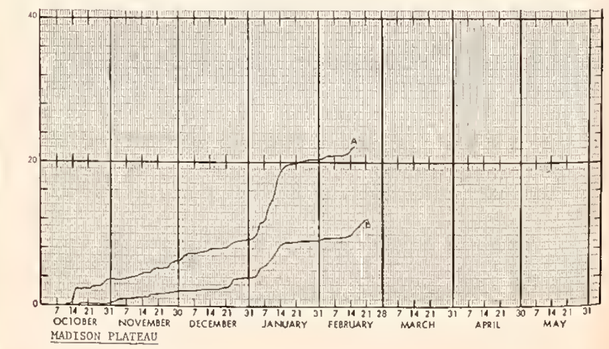
CENTENNIAL

A Divide, elevation 7,800 ft.
B Lakeview Ridge, elevation 7,400 ft.



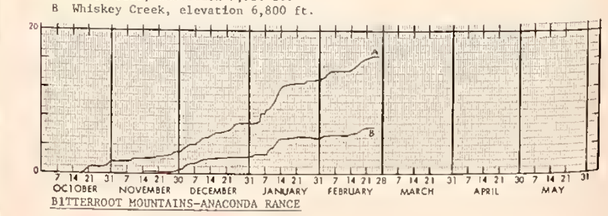
GALLATIN RANGE

A Shower Falls, elevation 8,100 ft.
B Lick Creek, elevation 6,860 ft.



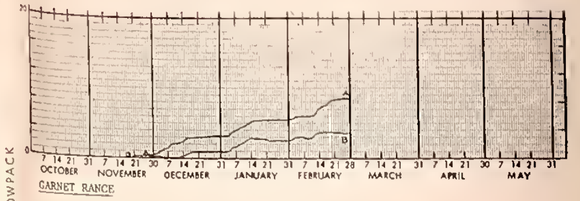
MADISON PLATEAU

A Black Bear, elevation 7,950 ft.
B Whiskey Creek, elevation 6,800 ft.



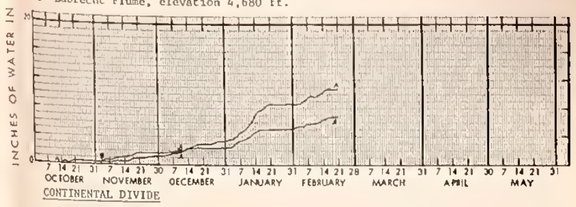
BITTERROOT MOUNTAINS-ANACONDA RANGE

A Saddle Mountain, elevation 7,900 ft.
B Calvert Creek, elevation 6,430 ft.



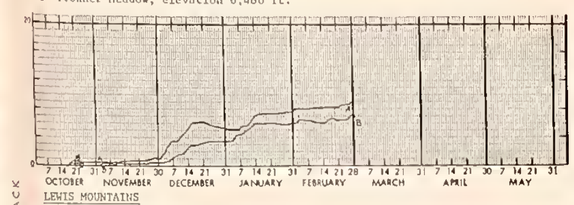
GARNET RANGE

A North Fork Elk Creek, elevation 6,250 ft.
B Lubrecht Flume, elevation 4,680 ft.



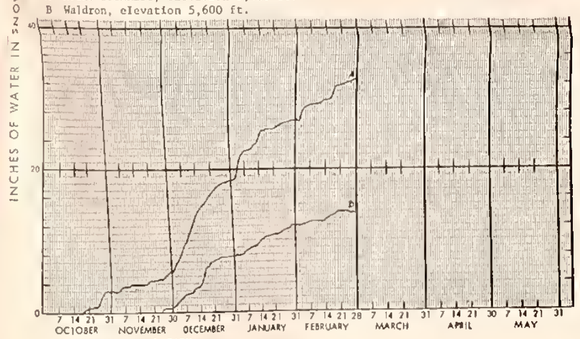
CONTINENTAL DIVIDE

A Rocker Peak, elevation 8,000 ft.
B Frohner Meadow, elevation 6,480 ft.



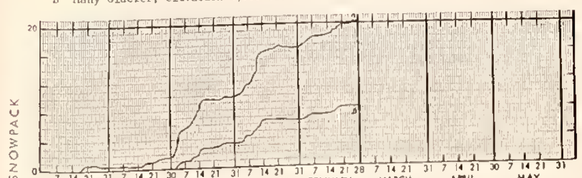
LEWIS MOUNTAINS

A Mount Lockhart, elevation 6,400 ft.
B Waldron, elevation 5,600 ft.



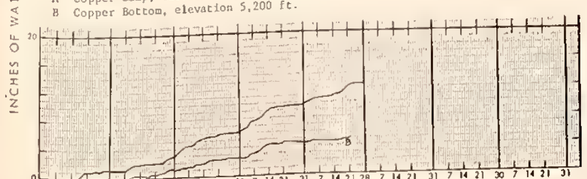
GLACIER NATIONAL PARK

A Flattop Mountain, elevation 6,300 ft.
B Many Glacier, elevation 4,900 ft.



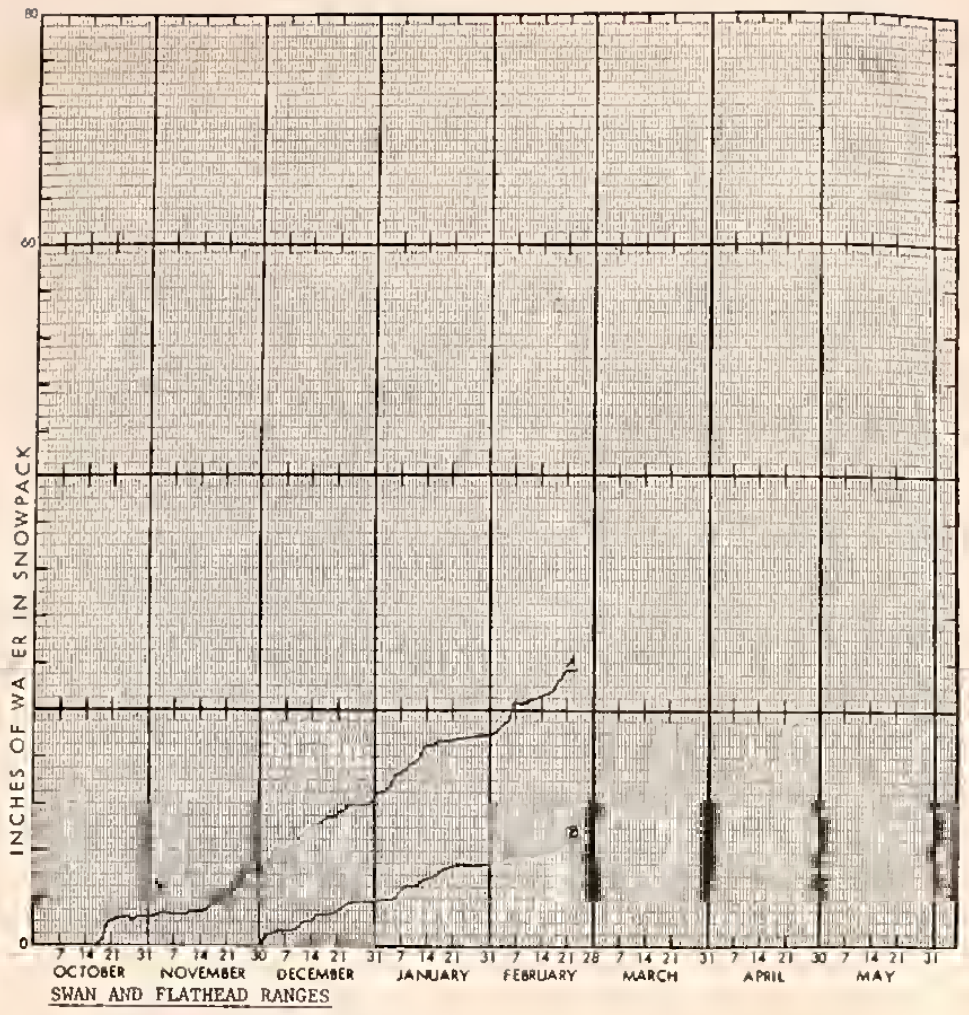
BLACKFOOT

A Copper Camp, elevation 6,950 ft.
B Copper Bottom, elevation 5,200 ft.



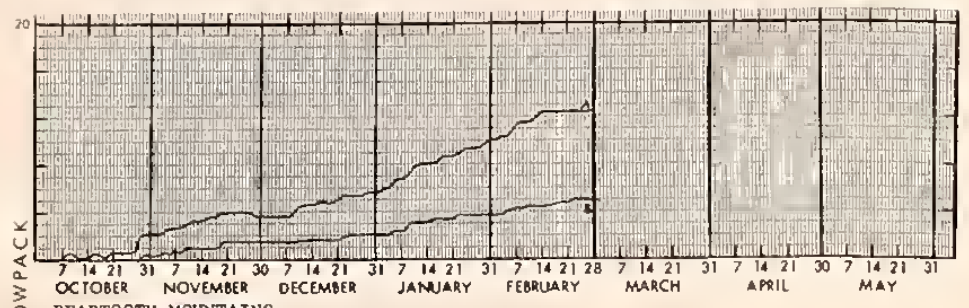
LITTLE BELT MOUNTAINS

A Spur Park, elevation 8,100 ft.
B Deadman Creek, elevation 6,450 ft.



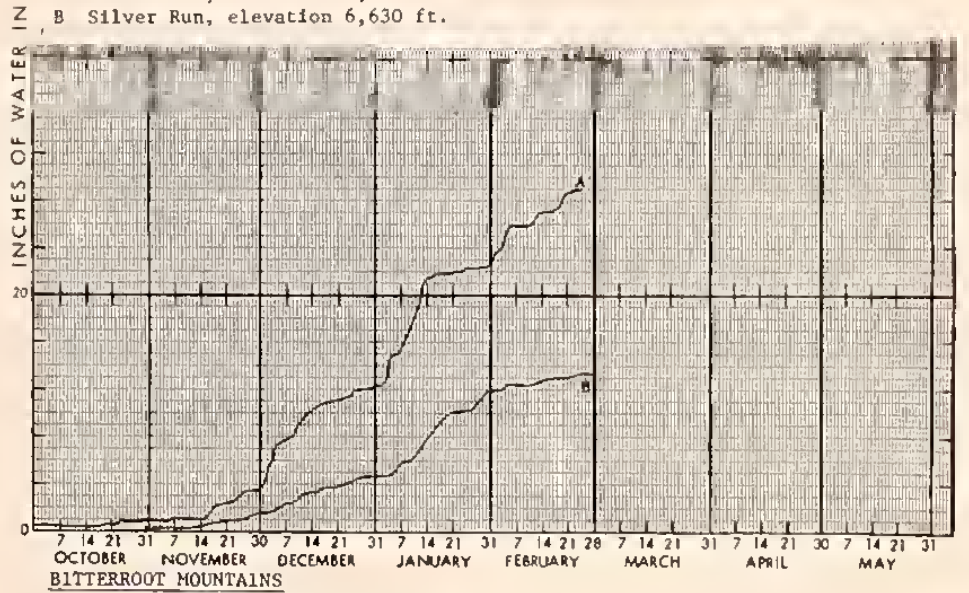
SWAN AND FLATHEAD RANGES

A Noisy Basin, elevation 6,040 ft.
B Emery Creek, elevation 4,350 ft.



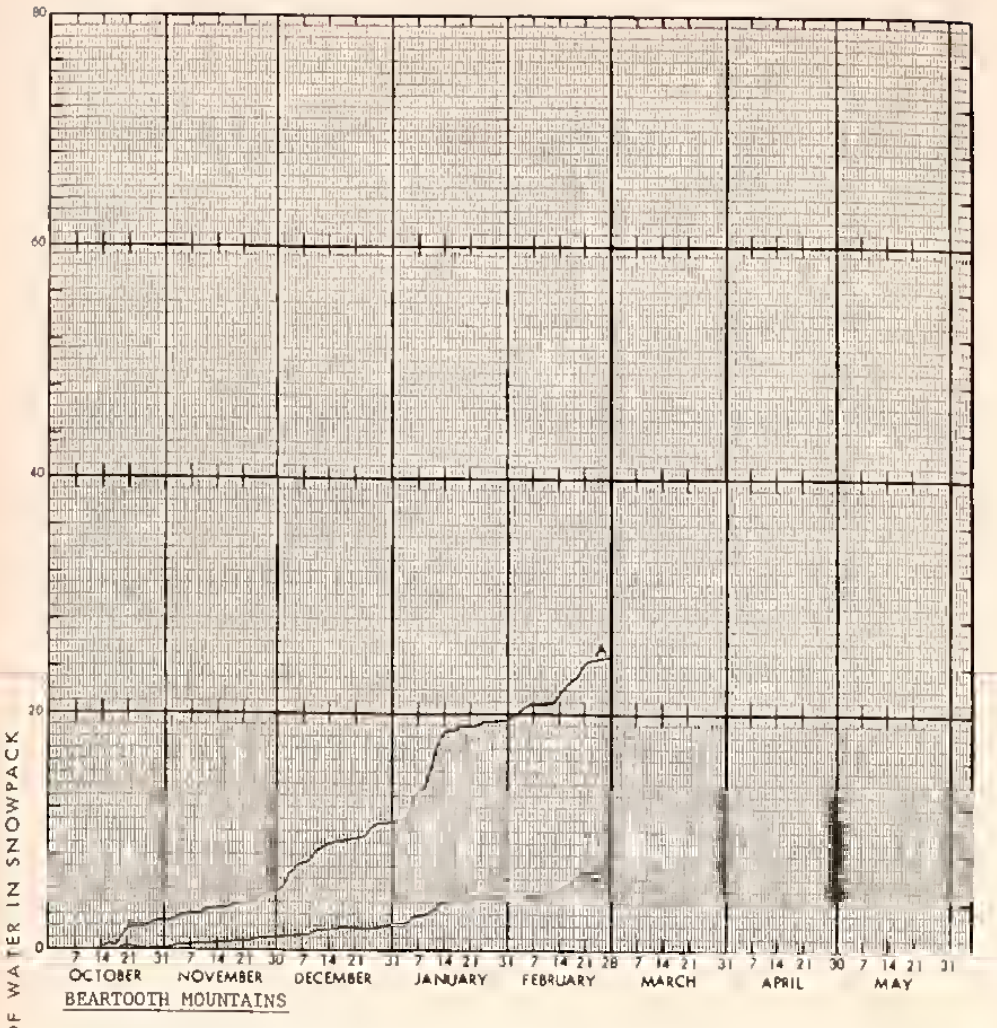
BEARTOOTH MOUNTAINS

A Cole Creek, elevation 7,850 ft.
B Silver Run, elevation 6,630 ft.



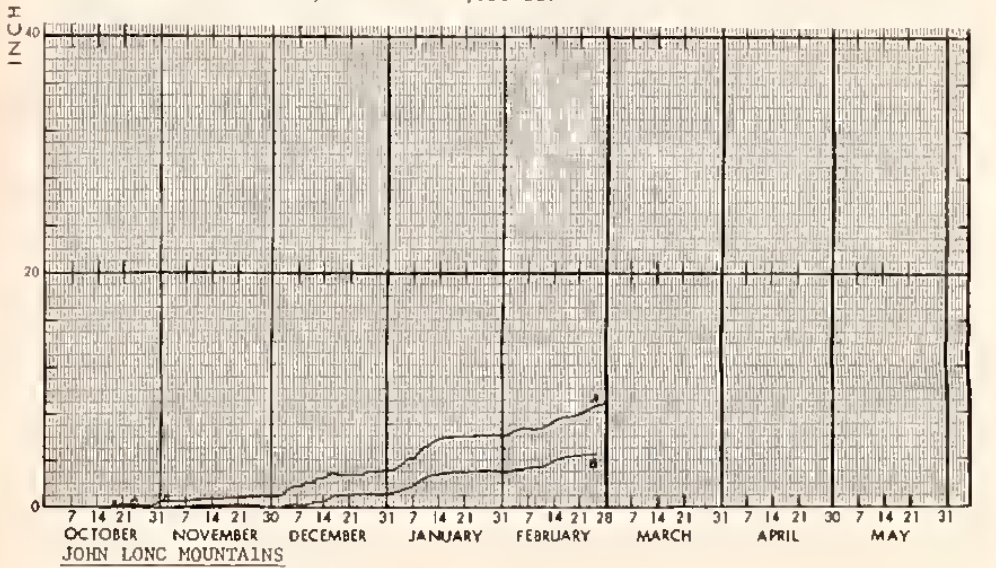
BITTERROOT MOUNTAINS

A Twin Lakes, elevation 6,400 ft.
B Twelvemile Creek, elevation 5,600 ft.



BEARTOOTH MOUNTAINS

A Fisher Creek, elevation 9,100 ft.
B Northeast Entrance, elevation 7,350 ft.



JOHN LONG MOUNTAINS

A Black Pine, elevation 7,100 ft.
B Combination, elevation 5,600 ft.

AGENCIES AND ORGANIZATIONS COOPERATING IN MONTANA SNOW SURVEYS

COVERNMENT ACENCIES

Canada
- Water Survey of Canada, Calgary, Department of the Environment
- Water Resources Service, Department of Lands, Forests and Water Resources, British Columbia
- Alberta Environment, Edmonton, Alberta

Federal
- Department of the Army - Corps of Engineers
- Department of Agriculture - Forest Service
- Department of Agriculture - Soil Conservation Service
- Department of Commerce - NOAA
- Department of Commerce - National Weather Service
- Department of Interior - Bonneville Power Administration
- Department of Interior - Bureau of Indian Affairs
- Department of Interior - Water & Power Resources Service
- Department of Interior - Fish and Wildlife Service
- Department of Interior - Geological Survey
- Department of Interior - National Park Service

STATE ACENCIES
- Montana Conservation Districts
- Montana Department of Fish, Wildlife & Parks
- Montana Department of Natural Resources and Conservation
- Montana State University - Agricultural Experiment Station
- University of Montana - School of Forestry
- DNRC - State Forester

PRIVATE ORCANIZATIONS AND INDIVIDUALS
- Butte Water Company
- Montana Power Company
- The Anaconda Company
- Big Sky of Montana
- Jack & Scott Craveley
- Arthur Christensen
- Jack Fenton

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